

Yellowstone County Officials, Weed Board and Staff Directory

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Vacant

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Note: Approximately 6 to 8 additional staff is added for seasonal/temporary positions to aid in the herbicide application program as well as a biological control program. Additionally, seasonal interns for projects such as weed inventory collections are also utilized.

Yellowstone County Weed District operates under the guidelines set within the Montana State Noxious Weed Law and Yellowstone County Policy.

The Yellowstone County Weed District is located in the County Shop Yard located at 3319 King Avenue East in Billings, Montana 59101.

INTRODUCTION

A.) Yellowstone County Weed District Organization

The Yellowstone County Weed District was organized under 7-22-2102 of the Montana Codes Annotated (MCA). It has a five-member weed board as created under 7-22-2103 of the MCA. The Board of County Commissioners selects the board members and their terms. The Noxious Weed Control Department falls under the umbrella of the county Public Works Department and administrator. The administrator will oversee the operation of the Yellowstone County Weed District by the Weed Superintendent. The Weed Superintendent will coordinate, plan, organize, direct, and supervise the activities of the Weed Control Department.

Powers and Duties of the Board, 7-22-2109 MCA - 1.) In addition to any powers or duties established in the resolution creating a district weed board, the board may:

- a. employ a coordinator and other employees as necessary and provide for their compensation;
 - b. purchase chemicals, materials, and equipment and pay other operational costs as it determines necessary for implementing an effective weed management program. The costs must be paid from the noxious weed fund.
 - c. Determine what chemicals, materials, or equipment may be made available to persons controlling weeds on their own land. The cost for the chemicals, materials, or equipment must be paid by the person and collected as provided in this part.
 - d. Enter into agreements with the department for the control and eradication of any new exotic plant species not previously established in the state which may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial use if the plant species spreads or threatens to spread into the state;
 - e. Enter into agreements with the county sheriff for the use of inmate labor for weed management under this part through a county jail work program that is authorized under 7-32-225 through 7-32-2227;
 - f. Enter into cost-share agreements for noxious weed management;
 - g. Enter into agreements with commercial applicators, as defined in 80-8-102, for the control of noxious weeds; and
 - h. Perform other activities relating to weed management.
- 2.) The board shall:
- a. administer the district's noxious weed management program;
 - b. establish management criteria for noxious weeds on all land within the district; and
 - c. make all reasonable efforts to develop and implement a noxious weed management program covering all land within the district owned or administered by a federal agency.

B. Overview of Yellowstone County Weed Control

Yellowstone County is not alone in the war on Noxious Weeds in Montana. Noxious Weeds have become established and are rapidly spreading in Yellowstone County and the entire state. It is Yellowstone County's intent to comply with the Noxious Weed Law as set forth in the Montana Weed Management Act, Title 7, Chapter 22, Sections 2101 through 2153 of Montana Codes Annotated. (See Attached Montana County Noxious Weed Control Act and Administrative Rules)

The Yellowstone County Weed District has developed this plan for the control of Noxious Weeds in Yellowstone County. Noxious Weeds are non-native plants that have become established or that may be introduced in the state. These Noxious Weeds may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses. These plants are designated as "Noxious" by rule of the Montana Department of Agriculture or as a District Noxious Weed by the Yellowstone County Weed Board.

Integrated Weed Management Program (IWM) - Yellowstone County Weed District maintains and recognizes that sustainable and cost effective weed management on rangeland will require an integrated approach. Integrated weed management includes procedures that reduce weed population numbers, reduce weed vigor, and increase competitiveness of desirable species.

Herbicide applications are an effective way to reduce weed populations, however compatibility with biological control insects will depend on herbicide rates and timing of application and size of infestation. Also taking into consideration the density of existing competitive vegetation and soil type and temperature. Yellowstone County Weed Department will identify the Noxious Weed problems, their location, infestation levels and utilize the guidelines set forth in this management plan to control those noxious weeds. The IWM program will also consider all environmental, public, and other agency concerns.

Noxious Weed Management on lands owned privately, by state, or by federal agencies not contracted with Yellowstone County Weed Control will be by the owner of that property. If the landowner has a noxious weed problem a 3-year Noxious Weed Management Plan must be submitted to the Yellowstone County Weed Board for approval. This plan must follow within the guidelines of the County Noxious Weed Management Plan.

Revised 2003
Noxious Weed Management Plan
Yellowstone County
Billings, Montana

History

Yellowstone County levied its first budget for weed, rodent and insect control in 1939. Since this time, the weed board deals mainly with noxious weed control and adopted its first weed management plan in 1994, which is on file at the Yellowstone County Weed Department.

Yellowstone County is the 23rd largest county in the state of Montana and encompasses approximately 1,695,240 acres of land or 2,648 square miles located in the southcentral area of the state. It is bordered on the north by Musselshell, Rosebud and Golden Valley Counties, to the west by Stillwater and Carbon Counties, to the south by Big Horn County and Crow Indian Reservation and to the east by Treasure County.

There are three incorporated cities in the county. They are Billings – population 91,750; Laurel – population 6,255 and Broadview – population 187. There are ten towns in Yellowstone County; Commanche, Acton, Shepherd, Huntley, Worden, Ballantine, Nibbe, Pompey's Pillar, Custer and Hesper. Total population including rural areas is approximately 129,352, which reflects a 14.05% increase since 1990. Yellowstone County is currently the largest county by population in the state.

Right-of-Way Statistics - Yellowstone County right-of-ways consist of, county roads - 296 miles paved and 809 miles of gravel and approximately 600 miles of subdivision roads. State highways encompass approximately 95 miles of 4-lane interstate and 418 miles of 2-lane secondary and Frontage Roads. Montana Rail Link and Burlington Northern/Santa Fe railways have an active weed control program in place for 140 miles of railroad right-of-way within the county.

Soils of Yellowstone County – Soil mapping was completed in the 1972 soil survey by the Soil Conservation Service. Razor Creek area was digitized on G.I.S. in 1991. The rest of the county soils are currently digitized. There are 14 major soil types out of the 166 soil types in Yellowstone County. They include:

- | | |
|-------------------------------------|-----------------------------|
| 1.) Bainville-Elso-McRae | 8.) Miggina-Absarokee |
| 2.) Cushamn-Bainville | 9.) McRai-Lohmiller-Keiser |
| 3.) Worland-Bainville-Travessilla | 10.) Vanada-McKinzie-Arvada |
| 4.) Bainville-Travessilla-Rock Land | 11.) Halverson |
| 5.) Wormser-Lavina-Razer | 12.) Bew-Allentine |
| 6.) Pierre-Lismas-Kyle | 13.) Wanetta-Keiser |
| 7.) Midway-Heldt | 14.) Danvers |

Weed Management Criteria – The following criteria apply to management of noxious weeds in Yellowstone County. Noxious Weeds in Yellowstone County are those declared “noxious” by the Weed Board and are prioritized accordingly. These weeds will be managed to achieve two effects: 1.) limit and prevent the spread of noxious weeds from existing infestations to uninfested sites and 2.) to eventually reduce the overall size of the existing infestations. The following weeds exist in the county and have been declared “noxious” in Yellowstone County by the Yellowstone County Weed Board:

CATEGORY 1

Canada Thistle (<i>Cirsium arvense</i>)	Leafy Spurge (<i>Euphorbia esula</i>)
Dalmation Toadflax (<i>Linaria dalmatica</i>)	Field Bindweed (<i>Convolvulus arvensis</i>)
Whitetop or Hoary Cress (<i>Cardaria draba</i>)	Sulfur (Erect) Cinquefoil (<i>Potentilla recta</i>)
Russian Knapweed (<i>Centaurea repens</i>)	Spotted Knapweed (<i>Centaurea maculosa</i>)
Diffuse Knapweed (<i>Centaurea diffusa</i>)	St. Johnswort (<i>Hypericum perforatum</i>)
Common Tansy (<i>Tanacetum vulgare</i>)	Houndstongue (<i>Cynoglossum officinale</i> L.)
Ox-eye Daisy (<i>Chrysanthemum leucanthemum</i> L.)	Yellow toadflax (<i>Linaria vularis</i>)

Category 1 noxious weeds are weeds that are currently established and generally widespread in many counties of the state. Management criteria include awareness and education, containment and suppression of existing infestations and prevention of new infestation. These weeds are capable of rapid spread and render land unfit or greatly limit beneficial uses.

CATEGORY 2

Meadow Hawkweed Complex (<i>Hieracium pratense</i> , <i>H. floribundum</i> , <i>H. piloselloides</i>)	
Purple Loosestrife or Lythrum (<i>Lythrum salicaria</i> , <i>L. virgatum</i>) and any hybrid crosses	
Dyers Woad (<i>Isatis tinctoria</i>)	Tall Buttercup (<i>Ranunculus acris</i> L.)
Tansy Ragwort (<i>Senecio jacobea</i> L.)	Salt Cedar (<i>Tamarix ramosissima</i> Ledeb.)
Orange Hawkweed (<i>Hieracium aurantiacum</i> L.)	Perennial pepperweed (<i>Lepidium latifolium</i>)

Category 2 noxious weeds have recently been introduced into the state or are rapidly spreading from their current infestation sites. These weeds are capable of rapid spread and invasion of lands, rendering lands unfit for beneficial uses. Management criteria include awareness and education, monitoring and containment of known infestations and eradication where possible.

CATEGORY 3

Yellow Starthistle (<i>Centaurea solstitialis</i>)	Common Crupina (<i>Crupina vulgaris</i>)
Rush Skeletonweed (<i>Chondrilla juncea</i>)	Yellow flag iris (<i>Iris pseudacorus</i>)
Eurasian watermilfoil (<i>Myriophyllum spicatum</i>)	

Category 3 noxious weeds have not been detected in the state or may be found only in small, scattered, localized infestations. Management criteria include awareness and education, early detection and immediate action to eradicate infestations. These weeds are known pest in nearby states and are capable of rapid spread and render land unfit for beneficial uses.

COUNTY DESIGNATED

Poison Hemlock (*Conium maculatum* L.)
Puncturevine (*Tribulus terrestris* L.)
Common Mullein (*Verbascum thapsus* L.)

Western Water Hemlock (*Cicuta douglasii*)
Common Teasel (*Dipsacus fullonum* L.)

In addition to the State Declared Noxious Weed list, each county weed district can declare additional non-native plants to be noxious within the county. The Weed Board in Yellowstone County declares the above weeds noxious.

MONTANA STATE NOXIOUS WEED LAW

INTRODUCTION

Yellowstone County recognizes the Montana State Weed Law and is committed to the effective management and eradication of state and county declared noxious weeds. The county assists the public and landowners as to their responsibility of controlling noxious weeds. The county continues to upgrade programs to better manage weed problems on a large scale including county, state and federal lands. Noxious weeds have a negative impact on nearly all aspects of life in Yellowstone County from aesthetics to actual loss of dollars. Yellowstone County encompasses nearly 2,648 of square miles, therefore, financial constraints must be considered. This plan is developed to address management criteria for the Yellowstone County Weed Board and Yellowstone County Commissioners' review and adoption.

The following Act reflects County Weed Board responsibility and authority:

COUNTY NOXIOUS WEED CONTROL ACT Title 7, Chapter 22 Sections 7-22-2101 through 7-22-2153 MCA Amended 2001

**(Please refer to the attached Montana County Noxious Weed Control Act and
Administrative Rules)**

GOALS AND PRIORITIES

The Yellowstone County Weed District has developed goals and priorities in conjunction with the County Noxious Weed Control Act, Title 7, Chapter 22 Montana Codes Annotated 2001, Administrative Rules 4.5.201 through 4.5.203 State of Montana, Department of Agriculture.

1. District supervisor and staff shall be available for programs in noxious weed education and IPM (integrated pest management) to all groups in the District.
2. The Weed District shall establish effective weed management criteria for all Category I, II, III, and county designated noxious weeds within the boundaries of Yellowstone County.
3. The Weed District shall enter into written agreements with all state and federal agencies with land holdings in the District. The agreement should include education, mapping and control measures for noxious weeds present on property under agency jurisdiction. MOU's will be signed by Weed Board Chairman.
4. The Weed District shall continue to chemically control noxious weeds on county rights-of-way.
5. Assist landowners in forming cooperative weed management groups to organize and carry out their plans. This includes weed trust fund applications as weed district resources allow. Landowner involvement is vital to the success of any landowner's group grants. The Board will determine area committee powers. The Board shall meet with area committees when discrepancies arise.
6. Promote professional, well-educated staff and high quality information and educational materials on weed management, using all available resources.
7. Assist with biological control research and releases.
8. Take all necessary action including weed law enforcement and posting to control the noxious weed spread in Yellowstone County.
9. Attend yearly crew training covering environmental and chemical issues including safety.
10. The Weed District shall continue to contract with the Montana Department of Transportation for the spraying of the noxious weeds upon its rights-of-way.
11. Upon request, if resources are available, the Weed District will contract and carry out work for additional agencies or private landowners under enforcement action.
12. Target eradication for Category 2 & 3 noxious weeds wherever possible and/or feasible.
13. The Weed Board shall take timely action on administrative hearings and appeals whenever a person is adversely affected by a notice, action or order of the District Board or Supervisor and the Board shall follow procedures set forth in Sec. 7-22-2110.

14. Gravel pits and piles belonging to Yellowstone County and private ownership shall be targeted for noxious weed eradication. The Board, in cooperation with DEQ, requires that all new gravel pits be inspected by Weed Department personnel and a noxious weed management plan completed before gravel is removed. Closures may take effect if compliance is not obtained. (See attached)
15. Abandoned pits shall be reseeded according to a State/District approved revegetation plan. The Department of Environmental Quality will be involved in all revegetation recommendations. Revegetation will be administered under the guidelines set forth in weed law enforcement.
16. Any state agency or local government unit approving a mine, major facility, transmission line, solid waste facility, highway, subdivision, or any other development resulting in significant disturbance of land within the District shall notify the Board to obtain a revegetation and management plan prior to disturbance.
17. All personnel of local, state, and federal agencies operating within the District shall be encouraged to promote noxious weed management and education and devise and implement effective noxious weed management practices.
18. Mapping of noxious weeds shall progress as time and money permit. All agencies as well as private landowners shall be encouraged to participate in area mapping.
19. The District shall continue to have a licensed Noxious Weed Seed Free Forage inspector on the premises in cooperation with the Yellowstone County Extension Department.
20. By Board approval, alternative management criteria may be set in conjunction with grant involvement or special management zones.
21. All subdivisions within Yellowstone County will be inspected by weed department personnel and a 3-year noxious weed management plan must be completed before approval by the Board of County Commissioners. (See attached)

METHODS OF WEED CONTROL

1. **PREVENTION:** The practice of not allowing noxious weeds to become established. Prevention is the most effective, economical and desired weed control practice. Practices include the use of certified seed, the use of weed seed free hay, the use of clean gravel, soil and fill dirt, maintaining fence rows, irrigation ditches and all non-crop areas weed free. Always reseed areas that have been disturbed.
2. **CULTURAL CONTROL:** The integration of components to minimize the impact of weeds. Selecting manageable fields, rotating crops, disrupting weed life cycles, planting competitive crops and altering planting dates.
3. **MECHANICAL:** Using methods to physically remove target weeds. Cultivation, hoeing, hand pulling, and mowing are commonly used. The use of cultivation is usually limited to farm/crop land and must be persistently cultivated to control perennial weed species.
4. **BIOLOGICAL:** Involves the introduction and establishment of selected natural enemies of a particular weed species. This may include insects, fungi, and diseases that attack the target weed while not affecting desirable species. Effective biocontrol depends on the use of several insects that attack different plant parts. Effective biocontrol should increase as insects become more available.
5. **CHEMICAL CONTROL:** The use of herbicides to control noxious weeds. Chemical control is the most commonly used method of weed control. If used properly and according to label directions, herbicides are a very effective means of control. Although chemicals can be expensive, they are still one of the most economic methods of control once weeds become established.
6. **INTEGRATED PEST MANAGEMENT:** One control method itself seldom provides complete control. Integrated pest management (IPM), is approaching weed control by combining two or more methods to improve results. The Yellowstone County Weed District provides a sound IPM approach, with detailed involvement in all methods of weed control.

NOXIOUS WEEDS IN MONTANA

Detection and Prevention

LEAFY SPURGE (*Euphorbia esula*): Leafy Spurge was brought to the U.S. from Eurasia about 1897. It is a very aggressive and “hard to kill” weed once established.

Growth Habit: Perennial, erect, up to 3’ tall, spreading by seed or creeping roots.

Leaves: Alternate, long, narrow, ¼” wide and 2” long, usually drooping

Stems: Branched near top, hairless.

Flowers: Inconspicuous, surrounded by large heart shaped floral leaves which turn yellow-green near maturity.

Roots: Brown, numerous pink buds, deep, spreading, very persistent. Root growth may exceed 30 feet in depth.

Other: Grows in nearly all soil types and habitats. Seed is thrown up to 20’ by exploding seed capsule. A white, milky latex exists in all parts of the plant. This latex can produce blisters and dermatitis in humans, cattle, and horses and may cause permanent blindness if rubbed into the eye. Protection is needed when handling Leafy Spurge.

DIFFUSE KNAPWEED (*Centaurea diffusa*): Diffuse knapweed is a native of Eurasia.

Growth Habit: Is an annual, biennial or short-lived perennial that can grow to a height of 3 feet.

Leaves: Grayish-green, alternate, basal leaves whorled, upper leaves much reduced. Covered with fine hair.

STEM: Hairy, erect, single main stem from a rootstock, branched near or above the base and has a bush appearance.

FLOWERS: Solitary, usually white, sometimes pink, rose or lavender. Bracts surrounding the flower are yellowish-green with a light brown margin. The upper part of each bract narrows into a short, stiff spine.

ROOTS: Elongated taproot.

SPOTTED KNAPWEED (*Centaurea maculosa*): Spotted knapweed is a native of Europe.

Growth Habit: Biennial or short lived perennial, up to 3 feet tall. Rosette formed first year, flowering stalk elongates second year.

Leaves: Long and divided below, short and narrow above. Covered with fine hair.

Stem: Erect with slender wiry branches. Covered with fine hair.

Flower: Seed heads are mostly on branched tips, solitary, to 1” in diameter. Flowers are usually purple, occasionally white. Seed head bracts are stiff, black tipped, with a dark comblike fringe of short feathery appendages.

Roots: Taproot not well developed.

Seeds: Brownish, 1/8” long, notched on one side of base, short tuft of bristles at tip end. Each plant produces from 400 to 25,000 seeds.

Other: Very aggressive, can infest large areas quickly, offers very little big game or livestock forage value.

RUSSIAN KNAPWEED (*Centaurea repens*): Russian knapweed is a perennial invader from Eurasia.

Growth Habit: Perennial herb, up to 3 feet tall, erect, may be in dense clumps. Grayish color.

Leaves: Alternate, simple, of several types: Upper leaves - small, narrow, unbroken edges; Stem leaves – intermediate in size, slight toothed margins; Basal leaves – deeply notched.

Stems: Numerous branched, each ending with a single flower.

Flower Head: Single, terminal, white or pink to lavender-blue, thistle like, scaly seed head. Greenish to straw-colored bracts surround the base of the seed head.

Roots: Dark brown to black and heavily scaled. Roots grow to a depth of 23 feet.

Seeds: Flattened, ivory colored, retained in cup shaped seed heads. Seeds have a plume that falls off at maturity.

Other: Leaves and stems covered with short stiff hairs giving plant an appearance of knapweed. Spreads by seeds and creeping rootstocks. Russian knapweed causes chewing disease in horses.

PURPLE LOOSESTRIFE *Lythrum salicaria*): Purple loosestrife is an aquatic native to Europe.

Growth Habit: A hardy perennial that can grow over 8 feet in height in height.

Leaves: Are usually opposite, narrow and elongated with smooth edges and attached directly to the stem.

Stems: A stiff four-sided stem.

Flower: Has 5 or 6 purple-magenta petals that develop on a spike closely attached to the stem.

Roots: Woody taproot with fibrous root system that forms a dense mat.

Other: A mature plant can produce over 1,000,000 tiny seeds in one growing season.

This weed rapidly displaces habitat and feed for wildlife. New plants can develop from broken off plant parts.

DALMATIAN TOADFLAX (*Linaria dalmatica*): Dalmatian toadflax is a native to the Mediterranean region.

Growth Habit: Woody perennial, tall, erect, 2 to 4 feet tall.

Leaves: Pale to light green, alternate, broad, heart-shaped, clasping the stem.

Stem: Branching, light green, smooth and leafy.

Flowers: Snapdragon type, bright yellow, tinged with orange, to 1 and ½: long with spur, born in upper leaf axils.

Roots: Vigorous, deep and extensive, creeping roots.

Seeds: Numerous, irregularly angled, produced in a pod.

Other: Spread by seed and creeping roots.

HOARY CRESS (Whitetop) (Cardaria draba): Hoary cress (whitetop) was introduced to the U.S. from Europe late in the 19th Century.

Growth Habit: Perennial herb, up to 24" tall, erect, becoming lodged with age.

Leaves: Alternate, lance-shaped and slightly irregular, grayish green, base of upper leaves clasping stem.

Stems: Stout, branched toward top.

Flowers: Small, white, 4 petals; numerous flower branches and dense flowers give plant a dense, white, flat-topped appearance.

Roots: Extensive horizontally and vertically, frequent shoots arising from root stocks. Root pieces can start new plants.

Seeds: Two small reddish-brown flat, granular, egg-shaped seeds contained in heart-shaped pods.

Other: Flowers early (April and May), reproduces by seeds, root stocks and creeping roots.

CANADA THISTLE (Cirsium arvense): Canada thistle is a native of Eurasia.

Growth Habit: Perennial, erect, up to 4 feet tall.

Leaves: Light to dark green, oblong or lance shaped, alternate, deeply cut, tipped with yellowish spines, and the underside is downy-white and slightly hairy.

Stem: Hollow, smooth to slightly hairy, branched at top.

Flower: Small bristly clusters, 3/8 to 5/8 inch in diameter, vary from white to lavender to deep rose purple. Plants are male or female.

Roots: Extensive, fleshy, creeping rootstocks.

Seed: Smooth, light to dark brown, tipped by a cupped conical point, approximately 1/8" long.

Other: Can develop from root fragments.

FIELD BINDWEED (Convolvulus arvensis): Field bindweed was introduced from Europe.

Growth Habit: Perennial, extensive root system, often climbing or forming dense tangled mats.

Leaves: Alternate, more or less arrowhead-shaped, pointed or blunt lobes at the base.

Stem: Prostrate, 1 to 4 feet long.

Flower: Bell or trumpet shaped, white to pinkish, approximately 1 inch in diameter with 2 small bracts located 1 inch below the flower. The flowering period is from late June until frost in the fall.

Fruit: Small, round capsule, usually 4-seeded. Seeds remain viable for up to 50 years.

Roots: Long, deep taproot which can penetrate the soil to a depth of 10 feet and which gives rise to numerous long lateral roots.

SULFUR CINQUEFOIL (*Potentilla recta*): Sulfur cinquefoil is an introduced perennial weed that has infested large acreage or range and pasture in Western Montana.

Growth Habit: Perennial, 1 to 1 and ½ feet tall, with well developed rootstocks.

Leaves: Palmately compound with 5 to 7 toothed leaflets on each leaf. Leaves that are sparsely hairy appear green on the underside rather than silvery as in many *Potentilla* species.

Stem: Long hairs growing at right angles to the leafstalk and stem.

Flower: Light yellow with 5 petals, each flower producing numerous single-seeded oval achenes. Flowering occurs from May to July.

Roots: Taproot; woody rootstock.

YELLOW STARTHISTLE (*Centaurea solstitialis*): Yellow Starthistle was introduced from Europe.

Growth Habit: Annual, 2 to 3 feet tall.

Leaves: Bluish green, basal leaves are deeply lobed while upper leaves are entire and pointed.

Stem: Has rigid branching, winged stems covered with a cottony pubescence.

Flower: Flower heads are yellow, located singly on ends of branches, and armed with sharp straw-colored thorns up to ¾ inch long.

Fruit: Ray flowered are dark-colored without bristles, while fruits from disk flowers are lighter and have a tuft of white bristles.

Roots: Taproot.

Other: “Chewing disease” results when horses are forced to eat the yellow starthistle due to lack of forage.

ORANGE HAWKWEED (*Hieracium aurantiacum*): Orange hawkweed was introduced from Europe, containing a milky juice.

Growth Habit: Fibrous rooted perennial herb up to 12 inches tall.

Leaves: Leaves are basal, occasionally with 1 or 2 small leaves.

Stem: Bristly stems.

Flower: It has 5 to 30 flower heads, each in a compact umbelliform inflorescence. The strap-shaped flowers are red-orange with notched tips. Yellow hawkweed (*H. pratense* Tausch) is similar in appearance to orange hawkweed.

Roots: Fibrous roots, rhizomes.

ST. JOHNSWORT (*Hypericum perforatum*): St. Johnswort, originally from Europe, is frequently found in the Pacific Northwest.

Growth Habit: A perennial reproducing by seeds or short runners.

Leaves: Leaves are opposite, sessile, entire, elliptic to oblong, not over 1 inch long, covered with transparent dots.

Stem: Stems are 1 to 3 feet high, erect, with numerous branches, somewhat 2-ridged, rust-colored, woody at their base.

Flower: Flowers are ¾ inch in diameter, bright yellow, numerous in flat-topped cymes, with 5 separate petals with occasional minute black dots around the edges. Petals are twice as long as the sepals. Stamens are numerous, arranged in 3 groups.

Seeds: Seed pods are ¼ inch long, rust-brown, 3-celled capsules, each with numerous seeds.

Other: A toxin may cause irritation on certain animals.

COMMON TANSY (*Tanacetum vulgare*): Common tansy is a native of Europe and became established in the U.S. when introduced as an ornamental and for medicinal purposes.

Growth Habit: A perennial reproducing from seeds and rootstalks.

Leaves: Leaves are alternate, deeply divided into numerous narrow, toothed segments.

Stem: Stems are 1 ½ to 6 feet tall.

Flower: Yellow flower heads, ¼ to ½ inch across, are numerous in flat-topped dense clusters.

Seeds: Seeds are yellowish-brown with short 5-toothed crowns.

Other: It is undesirable as forage for livestock, however, it has long been used as a medicinal herb.

OX-EYE DAISY (*Chrysanthemum leucanthemum* L.) Oxeye Daisy is a native of Eurasia and has escaped cultivation.

Growth Habit: An erect rhizomatous perennial.

Leaves: Leaves progressively reduce in size upward on stem. Basal and lower stem leaves are oblanceolate to narrowly obovate, 2 to 5 inches long including the petiole, margin crenate to lobed or parted. Upper leaves become sessile and merely toothed.

Stem: 10 to 24 inches tall, glabrous to sparsely hairy.

Flower: Flowering heads are solitary at the ends of branches, about 1 ½ inches long. Fruits have about 10 ribs.

Other: Flower heads having white ray flowers and yellow disk flowers. Flowering occurs from June through August and is often transplanted as an ornamental.

HOUNDSTONGUE (*Cynoglossum officinale* L.) Introduced from Europe, Houndstongue forms a rosette the first year and sends up a flowering stalk the second year.

Growth Habit: A biennial reproducing from seed.

Leaves: Leaves are alternate, 1 to 12 inches long, 1 to 3 inches wide, rough, hairy, and lacking teeth or lobes.

Stem: 1 to 4 feet tall

Flower: Reddish-purple and terminal. The fruit is composed of 4 prickly nutlets each about 1/3 inch long.

Other: Houndstongue is toxic, containing pyrrolizidine alkaloids, causing liver cells to stop reproducing. The nutlets break apart at maturity and cling to clothing or animals.

TAMARISK [SALT CEDAR] (*Tamarix* spp.) Introduced from Eurasia and is now widespread in the United States.

Growth Habit: Deciduous or evergreen shrubs or small trees, 5 to 20 feet tall.

Leaves: Leaves are small and scale-like, on highly branched slender stems.

Stem: Bark on saplings and smooth, woody stems is reddish-brown.

Flowers: Pink to white, 5-petalled and borne in finger-like clusters.

Other: Used as ornamentals, but have escaped and become naturalized along streams, canals, and reservoirs in much of the west.

COMMON CRUPINA (*Crupina vulgaris* Cass.): Common Crupina is native to the Mediterranean region.

Growth Habit: A Winter annual, erect to 3 feet tall.

Leaves: Rosette leaf margins smooth to slightly toothed, cotyledons have a red to purple midrib. Mature plant leaves alternate, attached directly to stems, deeply lobed or dissected with margins containing short stiff spines.

Stem: Stiff, terminating in one to several flowering branches.

Flower: 1 to 5 heads per branch, narrow, cylindrical pink lavender or purple. Flower in June and July.

Seeds: Oblong with a ring of dark stiff bristles encircling the broad end of the seed.

Other: Found in rangeland and disturbed non-crop areas.

TANSY RAGWORT (*Senecio jacobaea* L.): Tansy Ragwort arrived in North America via seaports from Europe in the early 1900s.

Growth Habit: Biennial or short-lived perennial, erect, branched near top. Reproduces by seed only.

Leaves: Alternate, deeply lobed with irregular margins, terminal lobe larger than lateral ones, cobwebby hairs in early growth stages.

Stem: Simple, usually single, to 6 ft. tall.

Flower: Flower heads yellow, numerous, in clusters, about 1 inch in diameter.

Seeds: Small, striped, with a protrusion at one end.

Other: Toxic to cattle and horses producing irreversible liver damage.

MEADOW HAWKWEED COMPLEX (*Hieracium pratense*, *H. floribundum*, *H. piloselloides*): There are about eleven species of highly invasive hawkweeds that were introduced to North America from Europe about 30 years ago.

Growth Habit: Perennial, erect to 12 inches tall.

Leaves: Lance-shaped, hairy, leaves are basal, occasionally 1 to 2 small leaves on stem.

Stem: Erect, bristly, terminate in an umbel of flower.

Flower: 5 to 30 per plant, yellow petals.

Other: entire plant contains a milky juice.

DYER'S WOAD (*Isatis tinctoria* L.): Dyer's Woad is part of the mustard family, and was introduced from Europe during colonial times.

Growth Habit: Biennial or perennial up to 3 ft. tall. Spreads by seed. Rosette formed 1st year, flowering stem elongates 2nd year.

Leaves: Basal rosette leaves are long with soft fine hairs. Stem leaves alternate, have short basal lobes clasping the stem and without hair.

Stem: Woody, upper portion is branched.

Flower: Small, yellow, 4 petals 1/8-inch across.

Seeds: Plant has many, slightly pear-shaped, winged, black seed pods 1/2 inch long that hang like ornaments. Each pod contains one seed.

Other: Formerly cultivated in Europe as a source of blue dye.

TALL BUTTERCUP (*Ranunculus acris* L.): Tall Buttercup was introduced from Europe.

Growth Habit: Perennial forb up to 3 feet tall.

Leaves: Leaves are dense, hairy and are deeply lobed into 3 to 5 segments with each segment lobed again. Decrease in size upward on the stem.

Stem: Branched, hairy stems.

Flower: Single, glossy-yellow flowers in loose clusters. $\frac{3}{4}$ to 1 inch in diameter with a greenish center.

Other: Poisonous to cattle

RUSH SKELETONWEED (*Chondrilla juncea* L.): Part of the Sunflower family, Rush Skeletonweed was introduced from Europe and is primarily spread by wind.

Growth Habit: Perennial, erect to 4 ft. tall

Leaves: Basal rosette leaves – sharply toothed lance-shaped (dandelion like). Upper leaves – inconspicuous, narrow, smooth margins.

Stem: Bottom 4 to 6 inches has numerous, red, downward bent coarse hairs. Stems smooth above, many branched.

Flower: Yellow, $\frac{3}{4}$ inch wide, scattered on branches. 7 to 15 strap-shaped petals are flat across the end terminating with distinct lobes or teeth.

Seeds: Pale brown to black, $\frac{1}{8}$ inch long, several ribbed, smooth below with tiny scale projections above, terminated by a long beak with numerous soft white bristles. Have potential to produce 20,000 seeds.

Other: Introduced from Eurasia.

YELLOW TOADFLAX (*Linaria vulgaris* Mill.): Introduced from Eurasia as an ornamental. Has an extensive creeping root system makes this plant difficult to control.

Growth Habit: Creeping Perennial, 1 to 2 ft. tall.

Leaves: Pale green, numerous, narrow, pointed at both ends, 2 $\frac{1}{2}$ or more inches long.

Flower: 1 inch long with a bearded, orange throat.

Seeds: Dark brown to black, $\frac{1}{12}$ inch in diameter, flattened with a papery circular wing.

Other: Fruit is round, $\frac{1}{4}$ inch in diameter, brown, 2-celled, with many seeds.

PERENNIAL PEPPERWEED (*Lepidium latifolium* L.): A native of southern Europe and western Asia. Forty percent of its total biomass is underground.

Growth Habit: Perennial, 1 to over 3 feet in height.

Leaves: Lanceolate, bright green to gray-green, entire to toothed, basal leaves larger than upper leaves.

Flower: White, in dense clusters near ends of branches, very small.

Seeds: 2 per fruit, rounded, flattened, slightly hairy, about $\frac{1}{16}$ inch long, and reddish-brown.

Other: Deep-seated rootstocks.

YELLOW FLAG IRIS (*Iris pseudacorus*): Only yellow iris in the U.S. Is spread by broken rhizomes

Growth Habit: Perennial , 2 to 3 ft. tall.

Leaves: leaves erect with upper part arching; leaves flattened, arising in a fan from the soil; raised midrib; sword-like, fine-pointed; 3-4 feet in height.

Stem: One to several yellow flowers on a robust stalk.

Flower: 3 in. wide; large, showy, pale to deep yellow; several flowers on each stem; patterns of delicate light-brownish to purple veins or flecks.

Other: Fruit is 6-angled, oblong capsule, about 2" (5 cm) long.

Roots: Rhizominous.

EURASIAN WATERMILFOIL (*Myriophyllum spicatum*): Is a submersed vascular plant that has the ability to reproduce from fragments and spread rapidly. Has a high growth rate in a range of temperatures and environmental conditions.

Growth Habit: Tendency to reach the surface and form extensive mats of plant at the surface.

Leaves: Usually closely-spaced leaves attached in whorls of four, but sometimes 3-5, are limp when out of water, typically has 12 to 21 pairs of leaflets.

Stem: Long branching stems near the surface.

Flower: Small reddish flowers in mid summer.

Other: Can grow up to 15 feet long.

PUBLIC EDUCATION

The Yellowstone County Weed District will continue to develop a coordinated public relations program, including media and other activities to stimulate all residents of Yellowstone County to be able to identify and properly control noxious weeds. Education and involvement of all Yellowstone County residents is crucial. The Weed District must make residents aware of the seriousness of the problem, enlist their support and encourage them to be active participants in the noxious weed control effort. The effort will be aimed both at stopping the spread of noxious weeds and eradicating or controlling existing infestations. The Yellowstone County Weed District will conduct countywide programs targeted to key groups, not just agriculture. Without such an effort, the following problems would arise:

1. Existing noxious weed problem would continue to spread.
2. Noxious weeds will spread by area residents inadvertently.
3. Yellowstone County's natural resource base will erode.
4. An uninformed public could lead to less funding for noxious weed control efforts in the future.

A. SPECIFIC OBJECTIVES

1. Increase awareness of the environmental and economic damage caused by Noxious weeds.
2. Educate people on proper identification of noxious weeds.
3. Develop a public interest and assist and support all efforts of weed control, including the providing of rental equipment, technical advise and the developing of weed management plans.

B. PLAN OF ACTION

1. The Yellowstone County Weed Control District will administer the program. The Weed District will continually determine the level of awareness in the county and will also determine what methods of education will be most effective. A budget of approximately one thousand dollars will be set aside annually for the public education effort.
2. Target audiences; while the target audience is everyone in Yellowstone County, the District has broken down the audience into smaller segments so that individual group's needs and concerns can better be addressed.

****Federal, State and local officials** – Since public agencies in Yellowstone County are actively involved in noxious weed control, efforts will be directed towards helping them educate their users about noxious weeds. Specifically, efforts will be about preventing the spread of noxious weeds onto public lands.

****Urban residents and businesses** – These individuals may have noxious weeds in alleys, vacant lots, yards, etc. without knowing the potential problem of transporting them to other areas. Key subgroups include the construction industry, utility companies and Realtors.

****Environmental groups** – Because noxious weeds can destroy natural ecosystems, environmental groups throughout the Yellowstone Valley should be encouraged to aid in the battle against noxious weeds.

****Farmers and Ranchers** – The very individuals whose livelihood depends on the productivity and ethics of the land may unknowingly contribute to the noxious weed problem. They may bring in contaminated seed, hay or equipment which spread noxious weeds during the course of normal farming or ranching practices.

****School Age Children and Instructors** – There is an opportunity to reach both teachers and students by providing audio, visual and other classroom material to this group. This includes 4-H, FFA classes, Boy Scouts, and grade school biology and science classes.